Volunteer Lake Assessment Program Individual Lake Reports

ISLAND POND, WASHINGTON, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	1,600	**Max. Depth (m):**	16.8	**Flushing Rate (yr^{-1}):**	1
Surface Area (Ac.):	202	**Mean Depth (m):**	5.6	**P Retention Coef:**	0.64
Shore Length (m):	5,800	**Volume (m^3):**	4,574,000	**Elevation (ft):**	1407

TROPHIC CLASSIFICATION

Year	Trophic class
2001	MESOTROPHIC
2007	MESOTROPHIC

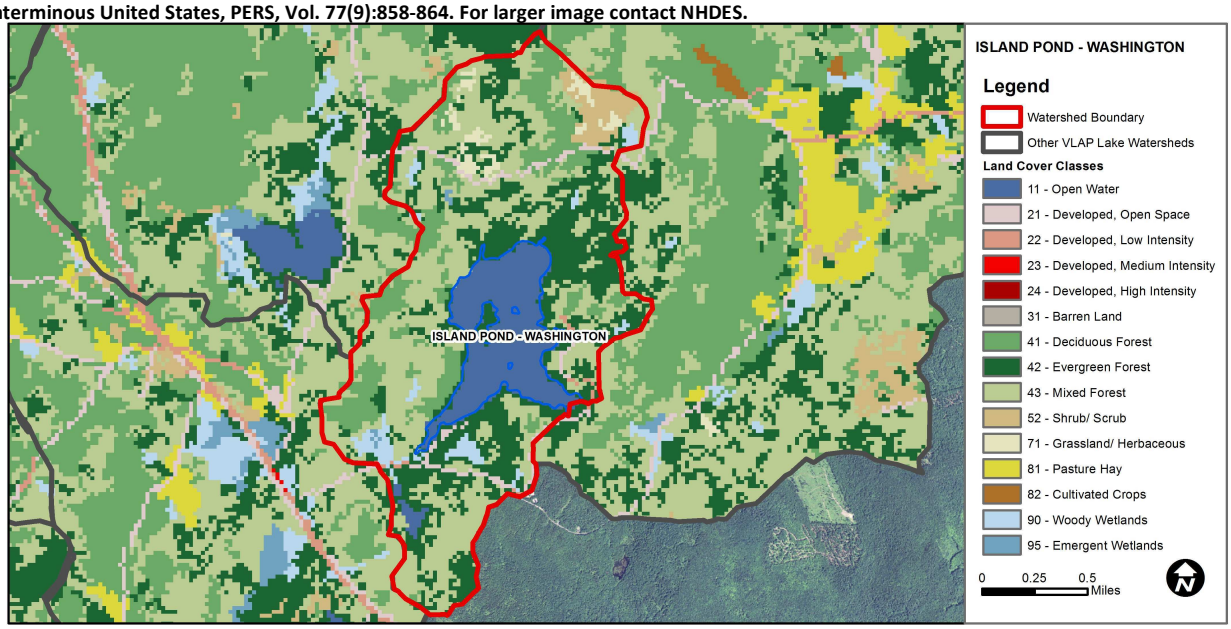
KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the DRAFT 2014 305(b) report on the status of N.H. waters, and are based on data collected from 2004-2013. Detailed waterbody assessment and report card information can be found at www.des.nh.gov/organizations/divisions/water/wmb/swqa/index.htm

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	The calculated median is from 5 or more samples and is > indicator and the chlorophyll a indicator is exceeded.
	pH	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.
	Oxygen, Dissolved	Very Good	There are a total of at least 10 samples with 0 exceedances of criteria.
	Dissolved oxygen satura	Encouraging	There are < 10 samples with 0 exceedances of criteria. More data needed.
	Chlorophyll-a	Slightly Bad	The calculated median is from 5 or more samples and is > indicator.
Primary Contact Recreation	Escherichia coli	Very Good	Where there are no geometric means, all bacteria samples are < 75% of the geometric mean. Where there are geometric means all single bacteria samples are < the SSMC and all geometric means are < geometric mean criteria.
	Chlorophyll-a	Good	There are at least 10 samples with one, but < 10% of samples, exceeding indicator.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	13.3	Barren Land	0	Grassland/Herbaceous	1.92
Developed-Open Space	1.99	Deciduous Forest	12.45	Pasture Hay	0
Developed-Low Intensity	0.4	Evergreen Forest	28.03	Cultivated Crops	0
Developed-Medium Intensity	0	Mixed Forest	36.68	Woody Wetlands	2.65
Developed-High Intensity	0	Shrub-Scrub	2.41	Emergent Wetlands	0.19

Volunteer Lake Assessment Program Individual Lake Reports

Island Pond, Washington

2015 Data Summary

Recommended Actions: In 2014, it was noted that beaver activity in Journeys End Inlet may have been affecting water quality. The elevated phosphorus and turbidity in 2015 may also reflect beaver activity which is a concern as Inlet water quality was significantly worse in 2015. If the beaver are still present, it is suggested to install a flow through device through the beaver dam to allow consistent water flow through the dam. Chlorophyll levels and transparency improved in 2015 potentially due to the dry weather conditions and lack of stormwater runoff and wetland flushing. This highlights the importance of implementing stormwater management activities to reduce stormwater runoff during high intensity precipitation events. DES' "N.H. Homeowner's Guide to Stormwater Management" is a great resource. Keep up the great work!

Observations (*Refer to Table 1 and Historical Deep Spot Data Graphics)*

- **Chlorophyll-a:** Chlorophyll levels were low in July, increased to average levels in August, and were less than the state median. The 2015 average chlorophyll levels decreased from 2014 and were the lowest measured since 2003. Historical trend analysis indicates highly variable chlorophyll levels since monitoring began.
- **Conductivity/Chloride:** Deep spot and tributary conductivity levels were low and approximately equal to the state median. Historical trend analysis indicates significantly decreasing (improving) epilimnetic (upper water layer) conductivity since monitoring began.
- **E. coli:** Beach, Boathouse Inlet and Bodnars Cove E. coli levels were low and much less than the state standard for public beaches (88 cts/100 mL) and surface waters (406 cts/100 mL) at each station.
- **Total Phosphorus:** Epilimnetic, metalimnetic (middle water layer) and hypolimnetic (lower water layer) phosphorus levels were low in July and increased slightly in August but remained less than the state median. Historical trend analysis indicates relatively stable epilimnetic phosphorus with moderate variability between years. Boathouse Inlet phosphorus levels were elevated in August during low flow conditions. Bodnars Cove phosphorus was elevated in July but decreased significantly to non-detectable levels in August. It is unknown what caused the elevated level in July. Journeys End Inlet phosphorus levels were elevated in July and decreased slightly in August but remained elevated. Stagnant conditions caused samplers to move downstream in July to collect a sample and the August sample was collected from stagnant water and the turbidity was elevated. This likely contributed to the elevated phosphorus.
- **Transparency:** Transparency was high (good) in 2015 and increased (improved) from July to August. Average transparency improved greatly from 2014, was better than the state median, and was the best measured since 2008. However, historical trend analysis indicates significantly decreasing (worsening) transparency since monitoring began. We hope to see the improved transparency measured in 2015 continue.
- **Turbidity:** Deep spot turbidity was low in July and then increased to slightly above average levels in August. Increased algal growth and low water levels likely contributed to the slightly higher August turbidity. Bodnars Cove and Outlet turbidity was low. Boathouse Inlet turbidity was elevated in August during low flow conditions. Journeys End Inlet turbidity was elevated in July and August potentially due to low flow and stagnant conditions.
- **pH:** Deep spot and tributary pH levels were less than the desirable range 6.5-8.0 units and potentially critical to aquatic life. Historical trend analysis indicates highly variable epilimnetic pH since monitoring began.

Table 1. 2015 Average Water Quality Data for ISLAND POND

Station Name	Alk. mg/l	Chlor-a ug/l	Cond. uS/cm	E. Coli #/100ml	Total P ug/l	Trans. m		Turb. ntu	pH
						NVS	VS		
Epilimnion	2.5	2.74	34.3		8	4.92	5.25	0.97	6.27
Metalimnion			32.7		8			1.17	5.35
Hypolimnion			32.4		9			1.09	5.30
Beach				2					
Boathouse Inlet			50.1	15	28			1.46	5.69
Bodnars Cove			32.4	10	22			0.84	6.12
Carp/Chase				10					
Dam Outlet			37.9		5			0.67	6.13
Journeys End Inlet			27.8		56			3.24	5.85

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: > 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: between 6.5-8.0 (unless naturally occurring)

Historical Water Quality Trend Analysis

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Improving	Data significantly decreasing.	Chlorophyll-a	Stable	Trend not significant; data highly variable.
pH (epilimnion)	Stable	Trend not significant; data highly variable.	Transparency	Worsening	Data significantly decreasing.
			Phosphorus (epilimnion)	Stable	Trend not significant; data moderately variable.